Worksheet

RATE STRUCTURE DESIGN

Use this worksheet to design a rate structure for your program. In Part A, estimate the amount of waste you will be collecting under Pay-As-You-Throw. In Part B, estimate your program costs and the cost of any complementary programs. Then estimate the per container price needed to meet your program costs in Part C. Complete this worksheet by considering whether this price strikes the right balance between costs and revenues.

Part A : Waste Collection Forecast

1. Current Waste Collection

_____ ÷ _____ = _____

Tons of MSW collected in the base year	Current number of community residents in the base year	Tons of MSW per resident in the base year

2. Community Growth

_____ X _____ = _____

Tons of MSW per resident in the base year	Estimated number of residents in the projection year	Annual MSW tonnage expected in the projection year without PAYT

3. Waste Collection Under PAYT

100 - _____% = _____ X _____= _____

Percentage decrease in MSW expected under PAYT	MSW reduction multiplier	Annual MSW tonnage expected without PAYT (from A-2)	Annual MSW tonnage expected under PAYT

_____÷ 12 = _____

Annual MSW tonnage expected under PAYT	Tons of MSW expected per month under PAYT

Worksheet # 5 (Continued)

Part B: Program Costs

Before calculating costs, you need to have already made some key financial assumptions. For instance, do you intend to include all costs associated with collection and disposal of MSW and recyclables, or a portion of those costs in the PAYT program? If you are only including a portion of those costs in the PAYT program, which costs are they?

After making these assumptions, use this section to estimate your monthly MSW and recyclables fixed and variable costs under the PAYT program in your projection year. Be sure to take into account the anticipated reduction of MSW when estimating costs. (For composting/yard waste collections or other supplementary programs, copy the next page and use it to estimate their costs.)

If you contract out for some or all of these services, enter this cost under the "contractor fees" line. Combine these costs at the end of this section to estimate the total cost of PAYT and your supplementary programs.

Fixed and variable costs can include the costs described on the worksheet. However, if you are not employing a full-cost accounting approach to your PAYT program and have made a determination that you will not be including all costs associated with MSW collection and disposal in the PAYT program, you may not need to include all these costs in your analysis. Note also that many of the costs described below apply to municipalities that perform municipal collection. Many municipalities contract collection out to a private hauler, or residents may contract with a hauler directly. In those cases, many of these costs will not apply.

Do not forget to include transportation costs to a transfer station, or from a transfer station to the final disposal site. If your municipality operates a drop-off center and/or transfer station, estimate its fixed and variable costs below as well.

This information can be gathered from:

- Public works department
- Town Treasurer
- Office of the chief elected official
- Resource Recovery Facility and recycling processing center that processes the materials generated by your municipality
- Tax assessor's office

1. Fixed MSW Collection and Disposal Costs Per Month (if applicable)

Physical facilities (e.g. maintenance, mortgage utilities)	$_____
Salaries and benefits (labor costs that remain fixed regardless of quantity of MSW collected)	$ _____
Vehicle Amortization	$ _____
Vehicle maintenance (vehicle maintenance costs that remain fixed regardless of quantity of MSW collected)	$ _____
Vehicle operating costs (vehicle operating costs that remain fixed regardless of quantity of MSW collected)	$ _____
Contractor Fees (if any)	$ _____
Other fixed costs	$ _____
Total Fixed MSW Collection and Disposal Costs Per Month	**$** _____

2. Variable MSW Collection and Disposal Costs Per Month (if applicable)

Salaries and benefits (labor costs that vary with the amount of MSW collected)	$ _____
Vehicle Maintenance (vehicle maintenance costs that vary with The amount of MSW collected)	$ _____
Vehicle operating costs (vehicle operating costs that vary with Amount of MSW collected)	$ _____
Contractor Fees (if any)	$ _____
Tipping Fees	$ _____
Other Variable Costs	$ _____
Total Variable MSW Collection and Disposal Costs Per Month	**$** _____

3. Total MSW Collection and Disposal Costs per Month

_____ + _____ = _____

Total Monthly fixed MSW Collection and Disposal Costs (from B-1)	Total Monthly Variable Collection and Disposal costs (from B-2)	Total Monthly MSW Collection and Disposal cost under PAYT

4. Fixed Recycling Collection and Processing Costs Per Month

Physical facilities (e.g. maintenance, mortgage utilities)	$_____
Salaries and benefits (labor costs that remain fixed regardless of quantity of recyclables collected)	$ _____
Vehicle Amortization	$ _____
Vehicle maintenance (vehicle maintenance costs that remain fixed regardless of quantity of recyclables collected)	$ _____
Vehicle operating costs (vehicle operating costs that remain fixed regardless of quantity of recyclables collected)	$ _____
Contractor Fees (if any)	$ _____
Education/Promotional Costs	$ _____
Other fixed costs	$ _____
Total Fixed Recycling Costs Per Month	**$** _____

5. Variable Recycling Collection and Processing Costs Per Month

Salaries and benefits (labor costs that vary with the amount of recyclables collected)	$ _____
Vehicle Maintenance (vehicle maintenance costs that vary with the amount of recyclables collected)	$ _____
Vehicle operating costs (vehicle operating costs that vary with amount of recyclables collected)	$ _____
Contractor Fees (if any)	$ _____
Tipping Fees	$ _____
Other Variable Costs	$ _____
Total VariableRecycling Costs Per Month	**$** _____

6. Total Recycling Collection and Processing Costs per Month

_____ Total fixed Recycling per month (from B-4)	+	_____ Total Variable Recycling costs per month (from B-5)	=	_____ Total Monthly Recycling costs under PAYT
_____ Total monthly recycling costs under PAYT (from B-6)	–	_____ Net Revenue from sale of recyclables per month	=	_____ Adjusted total monthly recycling costs under PAYT

7. Total Cost of PAYT and Complementary Programs

Total Monthly MSW collection and Disposal costs under PAYT (From B-3)	$_____
Adjusted total monthly recycling costs under PAYT (From B-6)	$ _____
Other monthly complimentary Programs, if any	$ _____
Total monthly cost of PAYT and Complementary Programs	**$ _____**

Part C: PAYT Revenues

Use this section to estimate the per-container price needed to meet your program's costs. These prices will be dependent on two things. First, the type of program you have identified as being the best for your municipality (see Worksheet #4) and second, the assumptions you have made regarding what specific costs you wish the PAYT program to cover.

If you have selected either bags or containers for your program, be sure to use more than one size bag and container in your estimates. For instance, a 33-gallon bag will hold approximately 25 lbs. of waste, while a 20-gallon bag will hold a little more than half that. If you are choosing containers, you might want to contact planners in communities that are using containers of similar sizes for help with this estimate.

Once you have identified the size bags/containers you will be using in your program, perform the calculations below separately for each container. If you are uncertain about how to convert your specific container's capacity from volume to weight, see the information on page 7 of this worksheet. You also might check with planners in other communities or weigh a random sampling of several filled containers and use the average weight for this calculation.

1. Container Selection and Capacity

Container Selection	_____ Cans, Bags, Tags, or Stickers
Volume of Selected Container	_____Gallons
Convert container capacity to weight	_____Tons

2. Estimated Per-Container Price

_____ Tons of MSW expected per month under PAYT (from A-3)	+	_____ Weight per container (From C-1)	=	_____ Number of containers per month
_____ Total monthly cost of PAYT and complimentary programs (from B-7)	–	_____ Number of containers per month	=	_____ Estimated price per container

Part D: Program Balance

At this point, you have developed a price per container that will help you cover your estimated costs. Remember, however, that your per container price is based on program costs in the projection year (once your program has reached the steady-state). Prior to the projection year you can expect greater waste collection amounts. This will result in greater revenues, but also greater costs. You might consult with planners in near-by PAYT communities for data on whether costs were greater or less in the two years before reaching the steady-state. If needed, adjust your per-container price to strike a balance between reasonable fees and covering your costs completely. Also consider whether your fee sends a strong enough waste reduction price signal to residents. Enter the revised per-container price below.

Revised price per container **$**_____

CONVERTING CONTAINER MSW CAPACITY from VOLUME to WEIGHT

If you have selected containers for your PAYT program and you need to convert your specific container's capacity from volume to weight (see page 5 of this worksheet) the information provided below may be helpful. However, it would probably be preferable to check with planners in other communities using similar containers or weigh a random sampling of filled containers and use the average weight for this calculation. If that is not feasible, the conversion factors given below will give you a ball park estimate of such weights. Please keep in mind that actual weights will vary widely depending upon the type of trash, density, moisture content, etc..

CONVERSION OF MSW WEIGHT PER CUBIC YARD TO MSW WEIGHT PER 90, 60, 30, OR 10 GALLON CONTAINER

(Based On Calculation: One Gallon = .00495 cubic yards**)**

Size Container In Gallons	Container Size in Cubic Yards (yd^3)	Calculated Weight of Uncompacted Residential MSW Based on Conversion Factors in the Literature[1]	Calculated Average Weight of Uncompacted Residential MSW Based on Conversion Factors in the Literature[1]	Average Weight of Uncompacted Residential MSW CT Hauler Estimate[2]	Calculated Weight of Uncompacted Non-Residential MSW Based on Conversion Factors in the Literature[1]	Calculated Average Weight of Uncompacted Non-Residential MSW Based on Conversion Factors in the Literature[1]
90 gallon	0.446 yd^3	67 lbs – 134 lbs	100 lbs	70 lbs	134 lbs – 268 lbs	201 lbs
60 gallon	0.297 yd^3	45 lbs – 89 lbs	67 lbs	40 lbs	89 lbs – 178 lbs	134 lbs
30 gallon	0.149 yd^3	22 lbs – 45 lbs	34 lbs	20lbs– estimated based on 60 gallon weights	45 lbs – 90 lbs	68 lbs
10 gallon	0.050 yd^3	7 lbs – 15 lbs	11 lbs	Na	15 lbs – 30 lbs	22 lbs

G:/payt/conversion factors garbage gallons to lbs.doc

[1] Conversion Factors Presented in: *Measuring Recycling – A Guide for State and Local Governments* - US EPA, September 1997 – as quoted from Solid Waste Association of North America, Manager of Landfill Operations Training and Certification Course, January 1989

Residential Waste (uncompacted at curb)	1 cubic yard	150-300 lbs
Commercial Industrial Waste (uncompacted)	1 cubic yard	300-600 lbs

[2] March 22, 2001 personal communication with Mike Paine, President of Paine's Inc., Recycling and Rubbish Removal, Simsbury, CT